Claims:

1. A diagnostic method for the detection of the 5T, 7T and 9T alleles in intron 8 of the human CFTR gene which method comprises contacting a test sample of nucleic acid from an individual with a multiplex of diagnostic primers comprising (i) 5T variant primer 5'(N)nAAAGAC3', (ii) 7T variant primer 5'(N*)n*(N)nAAAAGC3' and (iii) 9T variant primer 5'(N*)n*(N)nAAAATC3', wherein N represents additional nucleotides which base pair with the corresponding genomic sequence in the respective allele and n is an integer between 10 and 30 and N* represents additional non-homologous nucleotides which do not base pair with the corresponding genomic sequence in the respective allele and n* is an integer between 5 and 60, in the presence of appropriate nucleotide triphosphates and an agent for polymerisation, such that a diagnostic primer is extended only when the corresponding allelic variant is present in the sample; and detecting the presence or absence of the allelic variant by reference to the presence or absence of a diagnostic primer extension product.

2. A method as claimed in claim 1 and which comprises the detection of further human CFTR gene alleles by, in a separate ARMS reaction, the use of one or more of :

DF508 mutant primer 5'(N)nACCATT3',

3849+10kb C>T mutant primer 5'(N)nTACGCA3',

N1303K mutant primer 5'(N)nTCCATC3',

1717-1G>A mutant primer 5'(N)nTAATTA3',

W1282X mutant primer 5'(N)nCAGTCA3', and

G542X mutant primer 5'(N)nTTCTCT3' wherein N and n are as previously defined, in the presence of appropriate nucleotide triphosphates and an agent for polymerisation, such that a diagnostic primer is extended only when the corresponding allelic variant is present in the sample; and detecting the presence or absence of the allelic variant by reference to the presence or absence of a diagnostic primer extension product.

3. A method as claimed in claim 1 and which comprises the detection of further human CFTR gene alleles by, in a separate ARMS reaction, the use of one or more of :

DF508 non-mutant primer 5'(N)nACCACA3',

W1282X mutant primer 5'(N)nCAGTCA3',

1717-1 mutant primer 5'(N)nTAATTA3',

G542X mutant primer 5'(N)nTTCTCT3',

N1303K mutant primer 5'(N)nTCCATC3',

DF508 non-mutant primer 5'(N)nACCACA3',

DF508 mutant primer 5'(N)nACCATT3' and

3849+10kb C>T mutant primer 5'(N)nTACGCA3' wherein N and n are as previously defined, in the presence of appropriate nucleotide triphosphates and an agent for polymerisation, such that a diagnostic primer is extended only when the corresponding allelic variant is present in the sample; and detecting the presence or absence of the allelic variant by reference to the presence or absence of a diagnostic primer extension product.

4. A method as claimed in claim 1 and which comprises the detection of further human CFTR gene alleles by, in a separate ARMS reaction, the use of one or more of :

A455E mutant primer 5'(N)nGTTGTA3',

2183AA>G mutant primer 5'(N)nGATAGC3',

3659delC mutant primer 5'(N)nCCTAGA3',

DI507 mutant primer 5'(N)nATAACT3',

1078delT mutant primer 5'(N)nTTCCTG3',

R347P mutant primer 5'(N)nTCTACC3',

S1251N mutant primer 5'(N)nGAAGCA3' and

E60X mutant primer 5'(N)nCAGTTA3'

wherein N and n are as previously defined, in the presence of appropriate nucleotide triphosphates and an agent for polymerisation, such that a diagnostic primer is extended only when the corresponding allelic variant is present in the sample; and detecting the presence or absence of the allelic variant by reference to the presence or absence of a diagnostic primer extension product.

5. A method as claimed in claim 1 and which comprises the detection of further human CFTR gene alleles by, in a separate ARMS reaction, the use of one or more of :

G85E mutant primer 5'(N)nCTACGA3',

405+1G>A mutant primer 5'(N)nTAGTGA3',

S549R mutant primer 5'(N)nCTGACG3',

W1089X mutant primer 5'(N)nCAAATA3' and

D1152H mutant primer 5'(N)nCACTTG3' wherein N and n are as previously defined, in the presence of appropriate nucleotide triphosphates and an agent for polymerisation, such that a diagnostic primer is extended only when the corresponding allelic variant is present in the sample; and detecting the presence or absence of the allelic variant by reference to the presence or absence of a diagnostic primer extension product.

6. A method as claimed in any one of the previous claims and which further comprises the use of one or more common amplification primer(s) in the presence of appropriate nucleotide triphosphates and an agent for polymerisation, and subjecting the mixture to PCR amplification such that a diagnostic primer is extended only when the corresponding allelic variant is present in the sample; and detecting the presence or absence of the allelic variant by reference to the presence or absence of a corresponding PCR amplification product.

7. A method as claimed in any one of claims 2-6 and wherein two or more diagnostic primers are used as a multiplex.

8. A method as claimed in any one of claims 2-6 and wherein all of the diagnostic primers are used in a single multiplex reaction.

9. A method as claimed in any one of the previous claims and which further comprises the use of one or more control primers.

10. A method as claimed in claim 1 and used in conjunction with any known diagnostic CFTR gene procedure.

11. A diagnostic primer selected from any one of

5T variant primer 5'(N)nTGTTAAAGAC3',

7T variant primer 5'(N*)n*(N)nTTAAAAAAGC3' and

9T variant primer 5'(N*)n*(N)nAAAAAAAATC3' wherein N, n, N* and n* are as defined in claim 1 and n is an integer between 6 and 26

12. A diagnostic primer selected from any one of
5T variant primer 5'TAATTCCCCAAATCCCTGTTAAAGAC3',
7T variant primer 5'(N*)n*TAATTCCCCAAATCCCTGTTAAAAAAGC3' and
9T variant primer 5'(N*)n*TAATTCCCCAAATCCCTGTTAAAAAAAATC3' wherein N* and n* are as defined in claim 1.

13. A diagnostic primer selected from any one of
7T variant primer
5'GTTAATCATTCAGCTACTACGCACCTAATTCCCCAAATCCCTGTTAAAAAAGC3'
and 9T variant primer
5'GACTGTACGATACTCATTTATATGAAGTCAGCTACTTACCTATAGAACGCTTGC
TAGTTTAATTCCCCAAATCCCTGTTAAAAAAAATC3'

14. A set of diagnostic primers as set out in Table 1

15. A diagnostic primer selected from any one of
DF508 mutant primer 5'(N)nACCATT3',
3849+10kb C>T mutant primer 5'(N)nTACGCA3',
N1303K mutant primer 5'(N)nTCCATC3',
1717-1G>A mutant primer 5'(N)nTAATTA3',
W1282X mutant primer 5'(N)nCAGTCA3', and
G542X mutant primer 5'(N)nTTCTCT3' wherein N and n are as defined in claim 1 and n is an integer between 6 and 26

16. A diagnostic primer selected from any one of
W1282X mutant primer 5'(N)nGCAACAGTCA3',
1717-1G>A mutant primer 5'(N)nTTGGTAATTA3',
G542X mutant primer 5'(N)nATAGTTCTCT3',
N1303K mutant primer 5'(N)nGGGATCCATC3',
DF508 mutant primer 5'(N)nAAACACCATT3' and
3849+10kb C>T mutant primer 5'(N)nGTCTTACGCA3' wherein N and n are as defined in claim 1 and n is an integer between 6 and 26

17. A diagnostic primer selected from any one of
W1282X mutant primer 5'TCTTGGGATTCAATAACTTTGCAACAGTCA3',
1717-1G>A mutant primer 5'TCTCGAATTTTCTATTTTTGGTAATTA3',
G542X mutant primer 5'AGTTTGCAGAGAAAGACAATATAGTTCTCT3',
N1303K mutant primer 5'TGATCACTCCACTGTTCATAGGGATCCATC3',
DF508 mutant primer 5'GTATCTATATTCATCATAGGAAACACCATT3', and
3849+10kb C>T mutant primer 5'GAACATTTCCTTTCAGGGTGTCTTACGCA3'.

18. A set of diagnostic primers as set out in Table 2

19. A diagnostic primer selected from any one of
DF508 non-mutant primer 5'(N)nACCACA3',
W1282X mutant primer 5'(N)nCAGTCA3',
1717-1 mutant primer 5'(N)nTAATTA3',
G542X mutant primer 5'(N)nTTCTCT3',
N1303K mutant primer 5'(N)nTCCATC3',
DF508 non-mutant primer 5'(N)nACCACA3',
DF508 mutant primer 5'(N)nACCATT3' and
3849+10kb C>T mutant primer 5'(N)nTACGCA3' wherein N and n are as defined in claim 1 and n is an integer between 6 and 26

20. A diagnostic primer selected from any one of
DF508 non-mutant primer 5'(N)nAAACACCACA3',
R117H mutant primer 5'(N)nGCGATAGACT3',
621+1G>T mutant primer 5'(N)nGAAGTATTGA3',
R334W mutant primer 5'(N)nATCATCCTGT3',
R1162X mutant primer 5'(N)nTCTGTGAGTT3',
R553X mutant primer 5'(N)nTTCTTGCTGA3' and
G551D mutant primer 5'(N)nGCTCGTTGTT3' wherein N and n are as defined in claim 1 and n is an integer between 6 and 26

21. A diagnostic primer selected from any one of
R117H mutant primer5'AGCCTATGCCTAGATAAATCGCGATAGACT3',
621+1G>T mutant primer 5'TGCCATGGGGCCTGTGCAAGGAAGTATTGA3',
R334W mutant primer 5'CCTATGCACTAATCAAAGGAATCATCCTGT3',
R1162X mutant primer 5'TATTTTTATTTCAGATGCGATCTGTGAGTT3',
R553X mutant primer 5'TTATTCACCTTGCTAAAGAAATTCTTGCTGA3',
G551D mutant primer 5'GCTAAAGAAATTCTTGCTCGTTGTT3'.

22. A set of diagnostic primers as set out in Table 3

23. A diagnostic primer selected from any one of
A455E mutant primer 5'(N)nGTTGTA3',
2183AA>G mutant primer 5'(N)nGATAGC3',
3659delC mutant primer 5'(N)nCCTAGA3',
DI507 mutant primer 5'(N)nATAACT3',
1078delT mutant primer 5'(N)nTTCCTG3',
R347P mutant primer 5'(N)nTCTACC3',
S1251N mutant primer 5'(N)nGAAGCA3' and
E60X mutant primer 5'(N)nCAGTTA3' wherein N and n are as defined in claim 1 and n is an integer between 6 and 26

24. A diagnostic primer selected from any one of
A455E mutant primer 5'(N)nAGTTGTTGTA3',
1078delT mutant primer 5'(N)nAGGGTTCCTG3',
R347P mutant primer 5'(N)nTTGTTCTACC3',
DI507 mutant primer 5'(N)nGAAAATAACT3',
3659delC mutant primer 5'(N)nTAAACCTAGA3',
2183AA>G mutant primer 5'(N)nAAAAGATAGC3',
S1251N mutant primer 5'(N)nCAGGGAAGCA3' and
E60X mutant primer 5'(N)nAAGCCAGTTA3' wherein N and n are as defined in claim 1 and n is an integer between 6 and 26

25. A diagnostic primer selected from any one of
A455E mutant primer 5'TTCAAGATAGAAAGAGGACAGTTGTTGTA3',
1078delT mutant primer 5'CCTTCTTCTTCTCAGGGTTCCTG3',
R347P mutant primer 5'CACCATCTCATTCTGCATTGTTCTACC3',
DI507 mutant primer 5'GCCTGGCACCATTAAAGAAAATAACT3',
3659delC mutant primer 5'ATGCCAACAGAAGGTAAACCTAGA3',
2183AA>G mutant primer 5'CAAACTCTCCAGTCTGTTTAAAAGATAGC3',
S1251N mutant primer 5'GGAAGAACTGGATCAGGGAAGCA3' and
E60X mutant primer 5'TTAGGATTTTTCTTTGAAGCCAGTTA3'.

26. A set of diagnostic primers as set out in Table 4

27. A diagnostic primer selected from any one of
G85E mutant primer 5'(N)nCTACGA3',
405+1G>A mutant primer 5'(N)nTAGTGA3',
S549R mutant primer 5'(N)nCTGACG3',
W1089X mutant primer 5'(N)nCAAATA3' and
D1152H mutant primer 5'(N)nCACTTG3' wherein N and n are as defined in claim 1 and n is an integer between 6 and 26

28. A diagnostic primer selected from any one of
G85E mutant primer 5'(N)nTGTTCTACGA3',
405+1G>A mutant primer 5'(N)nTATTTAGTGA3',
S549R mutant primer 5'(N)nCACACTGACG3',
W1089X mutant primer 5'(N)nCTGCCAAATA3',
D1152H mutant primer 5'(N)nTATCCACTTG3' wherein N and n are as defined in claim 1 and n is an integer between 6 and 26

29. A diagnostic primer selected from any one of
G85E mutant primer
5'TAGCCATTGATGACGGAGCGATGTTTTTTCTGGAGATTTATGTTCTACGA3'
405+1G>A mutant primer

5'GATTTATGTTCTATGGAATCTTTTTATATTTAGTGA3',

S549R mutant primer 5'TGGAGAAGGTGGAATCACACTGACG3',

W1089X mutant primer 5'AAGCTCTGAATTTACATACTGCCAAATA3' and

D1152H mutant primer 5'AAAGATGATAAGACTTACCAAGCTATCCACTTG3'

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30. A set of diagnostic primers as set out in Table 5